

## Claims

1. A method for the spectral evaluation of an object to be tested in operating states characterized by operating parameters, a first  
5 operating parameter being an actual rotational speed value, wherein automatically

- a frequency spectrum (22, 23) of the object to be tested is recorded by measuring means, wherein the frequency spectrum (22, 23) has first amplitude values which depend on first frequency  
10 values,

- the first frequency values of the frequency spectrum (22, 23) are used for normalization in relation to the actual rotational speed value,

- an alarm curve (2) is formed with second amplitude values which  
15 depend on second frequency values,

- the second frequency values of the alarm curve (2) are used for normalization in relation to the actual rotational speed value,

- the second amplitude values of the alarm curve (2) are changed according to the operating parameters,

- the first amplitude values of the normalized frequency spectrum  
20 (22, 23) are compared with the second amplitude values of the normalized alarm curve (2) which is changed according to the operating parameters, and a result of the comparison is used to evaluate the object to be tested.

25 2. A method according to Claim 1,

c h a r a c t e r i z e d i n t h a t

the operating states of the object to be tested are characterized by a second operating parameter which is proportional to a load of the  
30 object to be tested.

3. A method according to Claim 1 or Claim 2,

c h a r a c t e r i z e d i n t h a t

the operating states of the object to be tested are characterized by

a third operating parameter which is proportional to a temperature of the object to be tested.

4. A method according to one of the preceding claims,  
5 c h a r a c t e r i z e d i n t h a t  
the second amplitude values of the alarm curve (2) are changed according to a function of the operating parameters, which function can be specified by a user.
- 10 5. A method according to one of the preceding claims,  
c h a r a c t e r i z e d i n t h a t  
the alarm curve (2) which is normalized and changed according to the operating parameters forms an envelope curve over the normalized frequency spectrum (22, 23) of the object to be tested in a fault-  
15 free normal condition, wherein an alarm is generated if at least one amplitude value of the normalized frequency spectrum (22, 23) lies outside the envelope curve.
6. A method according to one of the preceding claims,  
20 c h a r a c t e r i z e d i n t h a t  
the measuring means are fashioned as vibro-acoustic measuring means.
7. Use of the method according to one of Claims 1 to 6 for the spectral evaluation of a machine.
- 25 8. Use of the method according to one of Claim 1 to 6 for monitoring the vibration of vehicle components.